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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,714	11/20/2001	Steven Wang	CNTR-105xx	9578
207	7590	04/26/2005	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			LEFLORE, LAUREL E	
			ART UNIT	PAPER NUMBER
			2673	

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/989,714	WANG, STEVEN	
	Examiner Laurel E LeFlore	Art Unit 2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 08 November 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-11,48,50-61,64-71 and 74-85 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-11,48,50-61,64-71 and 74-85 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 14 February 2002 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-10, 48, 50-61, 64, 65, 67-71 and 74-85 rejected under 35 U.S.C. 102(e) as being anticipated by Hamaji 6,337,680 B1.

3. In regard to claim 1, Hamaji discloses an optical sensor assembly for tracking movement of a surface comprising a target comprising said surface movably mounted to present a varying segment of said surface to a focus area. See figure 4 depicting a target 31 and a focus area 33. Further see column 4, lines 50-52, disclosing, "A roller 31 is rotatably and axially slidably received in a recessed fitting 32". Hamaji further depicts in figure 5 that the target (element 31) is curved or rounded.

Hamaji further discloses an optical sensor comprising a single sensing component, said sensing component mounted facing said surface of said target at said focus area, wherein the single sensing component of said optical sensor detects a change in position of said surface in multiple directions. See column 4, line 61 to column 5, line 5, disclosing, "The outer cylindrical surface of the roller 31 has a grid drawn thereon, which serves both for detecting the direction in which the roller 31 is

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rotated and the number of revolutions thereof and for detecting the direction in, and the distance by, which the roller 31 is axially moved. Such detection is carried out by a detector 33 disposed approximately medially of the ends of the recessed fitting 32 and in opposed relationship to the outer cylindrical surface of the roller 31. The detector 33 is of the type well known to those skilled in the art as a detector utilized in connection with an optical mouse".

Also see column 4, lines 14-21, disclosing, "If the outer cylindrical surface of the hollow roller 21 has a grid drawn thereon as is the case with a roller 31 shown in FIG. 4, such a hollow roller 21 has the advantage of requiring only one photoelectric detector both for detecting the direction in which the hollow roller 21 is rotated and the number of revolutions thereof and for detecting the direction in, and the distance by, which the hollow roller 21 is axially moved."

Hamaji further discloses that the optical sensor is operative to compare images of said surface at known time intervals. See column 4, lines 28-44, disclosing, "Referring in more detail to the photoelectric detecting means, reference should be made to FIG. 6...A beam of light directed by the light source 28b to the surface of the slider 20 is reflected thereon and incident on the photoresponsive apparatus 28c. During the movement of the slider 20, the quantity of light reflected on the surface thereof decreases every time the beam of light directed by the light source 28b to the surface of the slider 20 strikes a stripe d drawn thereon perpendicularly to the arrow 20a. Thus the stripe d is recognized from a decrease in the quantity of reflected light. A measurement value representing the distance by which the slider 20 is moved is

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obtained from the number of stripes 20d thus recognized." Thus, the stripes are images being compared. The known time interval at which the stripe images are compared is during any movement of the rollerbar.

4. In regard to claim 2, see figure 4, depicting the optical sensor 33 positioned substantially beneath said surface 31.

5. In regard to claim 3, Hamaji discloses that target is cylindrical. See column 4, line 61, disclosing "the outer cylindrical surface of the roller 31". Further see figure 4, depicting that the optical sensor is aligned placing said focus area perpendicular to a longitudinal axis of said cylinder and said surface is the circumferential surface of said cylinder (also see rejection of claim 1).

6. In regard to claims 4 and 5, see column 3, line 44, disclosing "an outer diameter of 10 to 20 mm." Thus, Hamaji discloses that said cylinder has a diameter greater than approximately 8 mm and that the cylinder has a diameter between approximately 8 mm and 12 mm (i.e. 10 mm).

7. In regard to claim 6, see rejection of claim 1. Note that "the outer cylindrical surface of the hollow roller 21 has a grid drawn thereon as is the case with a roller 31 shown in FIG. 4". This is understood to constitute a textured surface.

8. In regard to claim 7, Hamaji discloses that the surface is adapted to move vertically and the response of said optical sensor is substantially invariant to said vertical motion. See figure 4 and column 4, lines 52-60, disclosing, "Each of the hinges 36 comprises a fixed end connected with a palmrest 34 and a hinged end connected with an end of the recessed fitting 32. The hinged end, together with the recessed

fitting 32, is pivotal about a hinge pin 36p. A switch means 35 is located below the hinged end so that switching action may be effected when the thumb or fingers of an operator engage the roller 31 or the recessed fitting 32 with a force thereto." Note the optical sensor 33 is connected with the recessed fitting 32 and thus inherently moves with the recessed fitting 32 and the roller 31.

9. In regard to claim 8, see figure 4, depicting the optical sensor 33 positioned perpendicular to and beneath said surface 31.

10. In regard to claim 9, see rejection of claim 7, disclosing a switch disposed beneath a portion of said surface, wherein said vertical movement of said surface activates said switch.

11. In regard to claim 10, Hamaji discloses that the rollerbar has a left end and a mounting end. See figure 4, depicting a left end and mounting ends (at hinges 36). Hamaji further discloses that the rollerbar is adapted to traverse a left travel distance. See rejection of claim 1 and note that "the roller 31 is axially moved". Thus, the roller moves left and right along an axis and the left travel distance can be any distance that the bar travels in a left direction. While Hamaji does not specifically disclose an "activation distance", Hamaji does disclose (again see the rejection of claim 1) a detector that detects movement of the rollerbar. Thus an activation distance is inherent and is the distance the roller moves at which the detector detects movement. A "focus area" is also inherently the area at which the sensor detects movement of the roller. Note the location of the focus area in figure 4, which is the location of sensor 33. Inherently, this location is at some time approximately the sum of two times the left

travel distance plus the activation distance from the left end of the roller bar, since the left travel distance can be any distance.

12. In regard to claim 48, see rejection of claim 7. It is inherent that the optical sensor 33 moves with the surface maintaining a constant distance and orientation to the surface.

13. In regard to claim 64, see figure 4 and rejections of claims 1 and 3.

14. In regard to claims 65 and 67-71, see rejection of claim 1.

15. In regard to claim 50, see rejection of claim 1. Hamaji further discloses a base and a support mechanism supported on the base. See rejection of claim 7. Palmrest 34 is a base and recessed fitting 32 is a support mechanism.

16. In regard to claim 51, see figures 4 and 5, element 32.

17. In regard to claim 52, see rejecion of claim 7 and figure 4. The support mechanism 32 comprises member extending between two support elements at either ends, hinges 36.

18. In regard to claim 53, Hamaji discloses that the support mechanism comprises a member extending from a support element at a first end to a spring member at a second end. See the hinge 36 of figure 5. Also see column 4, lines 56-60, disclosing, "A switch means 35 is located below the hinged end so that switching action may be effected when the thumb or fingers of an operator engage the roller 31 or the recessed fitting 32 with a force thereto." Although Hamaji does not specifically disclose a "spring" member, it is inherent that this hinge and switch must return from engagement in order to deactivate the switch. Thus, a member (hinge 36) extends from a support element (34)

at a first end to a spring member (switch and part of hinge 36 extending from hinge pin 36p to the right in figure 5) at a second end.

19. In regard to claim 54, Hamaji discloses that the support mechanism comprises a member extending from a mount at a first end to a switch mechanism at a second end. See rejection of claim 54 and figures 4 and 5. Hamaji further discloses that the support member is disposed for reciprocal translation having a vertical component into and out of contact with the switch mechanism, as depicted in figure 5.

20. In regard to claims 55 and 57, see rejection of claim 1.

21. In regard to claims 56 and 58, Hamaji discloses that the surface is rollably and translatable supported by a bearing mechanism on the support mechanism. See column 3, lines 53-55, disclosing, "the rail 22 may be journaled in suitable bearings". Note that the rail 22 corresponds to the recessed fitting 32 of figure 4.

22. In regard to claim 59, Hamaji discloses that the surface comprises a sleeve rotatable via a bearing mechanism around the support mechanism and translatable along the support mechanism, rotation and translation of the sleeve being interpretable by the sensor. See rejection of claims 1, 50, 56 and 58 and figures 4 and 5. Further see figures 1 and 3.

23. In regard to claim 60, Hamaji discloses that the surface has a matte texture. See rejection of claim 1. Note that "the outer cylindrical surface of the hollow roller 21 has a grid drawn thereon as is the case with a roller 31 shown in FIG. 4". This is understood to constitute a textured surface. A matte texture is understood to be a dull or rough

texture. Such a drawn grid would inherently create a surface of texture and dullness. Thus, the surface has a matte texture.

24. In regard to claim 61, see rejection of claim 60.
25. In regard to claim 74, see rejection of claim 64.
26. In regard to claims 75-78, see rejection of claim 1.
27. In regard to claim 79, see figure 5, depicting that the support mechanism (32) comprises a member extending from a first end to a second end the member cantilevered from a mount at the first end. Note the configuration of the hinge 36 cantilevered from a left side (end) of the rollerbar) extending to a right end.
28. In regard to claim 80, Hamaji discloses that the first end of the member extends from the mount at an upward angle to form a bow in the member between the first end and the second end. Note the bow at hinge pin 36p of figure 5. Also, the upward angle is a relative term and the member 36 extends from the mount at an upward angle depending on the direction from which one is viewing the hinge.
29. In regard to claim 81, Hamaji discloses that the second end floats on a switch in a rest position. Note the switch 35, depicted in figure 5.
30. In regard to claims 82 and 83, Hamaji discloses that the support mechanism comprises a springy member having a bowed shape from a first end to a second end. See the hinge 36 of figure 5. Also see column 4, lines 56-60, disclosing, "A switch means 35 is located below the hinged end so that switching action may be effected when the thumb or fingers of an operator engage the roller 31 or the recessed fitting 32 with a force thereto." Although Hamaji does not specifically disclose a "springy"

member, it is inherent that this hinge and switch must return from engagement in order to deactivate the switch. Thus, the hinge and switch, with the roller 31 and recessed fitting 32 are "springy".

31. In regard to claim 84, Hamaji discloses a tension adjustment device disposed to adjust the bowed shape of the springy member. Note hinge pin 36p. The bowed shape of the hinge is adjusted by pivoting the hinge about this hinge pin. Thus, this hinge pin constitutes a tension adjustment device.

32. In regard to claim 85, see figure 5 depicting that the tension adjustment device (36p) is disposed to adjust the angle of the springy member from horizontal at the first end.

#### ***Claim Rejections - 35 USC § 103***

33. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

34. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaji 6,337,680 B1 in view of Nitsuma 5,164,712.

35. In regard to claim 11, Hamaji discloses an invention similar to that which is claimed in claim 11. See rejection of claim 6, disclosing that the rollerbar is textured. Further see figure 4, which depicts that only a portion of the rollerbar has the textured grid. Thus, the roller bar has a first portion and a second portion having a textured surface. Hamaji does not disclose that the second portion has a shiny hard surface.

Niitsuma discloses a rollerbar assembly with a bar (slider) made of synthetic resin and a guide member made of metal (see column 8, lines 3-6). Both synthetic resin and metal can be shiny. Also hardness of the rollerbar is inherent as the entire bar is slideable with a single finger (see column 1, line 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Culver by making the rollerbar have a shiny hard surface. One would have been motivated to make such a change based on the teaching of Niitsuma to use synthetic resin and metal for the assembly of the rollerbar. Further, making the rollerbar hard and/or shiny appears to be a design choice as there is no disclosed criticality of having part of the rollerbar be shiny or hard.

***Response to Arguments***

36. Applicant has amended the drawings to overcome the objections of the paper dated 6 July 2004. Previous objection to the drawings is withdrawn.
37. Applicant argues on page 11 of the paper dated 6 October 2004 that in the applicant's invention, "the optical sensor is operative to compare images of the surface at known time intervals", as recited in claims 1 and 50. Applicant further argues that "Hamaji, in contrast, discloses a photoelectric detector that requires a special grid with evenly spaced lines on the roller". However, it is unclear how this is unlike the immediate application. Applicant's specification on page 13, lines 6-9, discloses, "One implementation of the motion sensor 58 functions by comparing images of the sleeve 72 at known time intervals to determine the movement. The sensor 106 detects patterns in

sleeve 72". These patterns are further depicted in figures 15A and 15B of the immediate application.

Further, Himaji does disclose comparing images (of the rollerbar stripes) at known time intervals. See the above rejection of claim 1.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurel E LeFlore whose telephone number is (571) 272-7672. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEL  
18 April 2005



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